the chilling of the water, and this, of course, presupposes that the pond is fairly full, otherwise there would be no water-surface at all to speak of. Perhaps it is intended that when empty the puddled clay commences the operation, and when the water has arrived this carries on the process. What evidence is there that this is so? The chief evidence is found in that ice is obtained in India by placing pans of water in shallow beds filled with rice-straw.

This is excellent so far as it goes, and Dr. Wells records that he performed the same experiment in England nearly a hundred years ago. Thus there is a presumption that if straw be laid down under a pond, it may act in such a way as to cut off the heat of the earth below. The difficulty lies in carrying out a similar process on a large scale, and at the same time in keeping the straw dry. Should it become moist, and it must do so if in contact with puddled clay, it will cease to be an efficient non-conductor of heat, and it must be borne in mind that whereas the straw under the ice-pans in India can be, and is, frequently changed, this cannot be done under a pond. Mr. Hubbard says:—"In numerous dew-ponds in this country the dew-point is reached without difficulty." Nothing is given in support of this statement, and we may well ask on what evidence it is based. It presumably means that the water itself reaches a temperature which is below the dew-point. A number of observations made by the writer have never yet revealed the fact. The water of a pond parts with its heat extremely slowly. To be of value toward the replenishment of a pond, the dew must be received in the height of summer, when there is but little rainfall, and when, as is admitted, the ponds at lower levels are drying up. The pond is heated during the day, and evidence is wanting as yet that it falls below dew-point at night. Of course, dew is being received on the grassy banks around, that is to say, on vegetation, but the radiating powers of water and grass are apart as the poles, and on radiation dew-fall, as we know it, depends.

As Mr. Hubbard states, the altitude of the ponds may result in some amount of condensation, owing to the lowering of temperature resulting from the expansion of the air. This would, however, be but a small factor, whilst the condensation would show itself as mist. There may be something, too, but not much, in the osmotic action of dew-pond water, containing as it does a small proportion of sodium chloride. But there must be some greater factor at work if we are to credit the few records which have been made of the acquisition of, for instance, "3½ inches of water after five nights of heavy dew."

Mr. Hubbard rightly judges the importance of the dew-pond principle, if fully established, in countries where there is no natural water-supply other than dew. He is also quite correct in dwelling upon the importance of vegetation in increasing the rainfall of a district. But when we hear of the rising of the water in a pond by an inch or more in a night, we desire to know if there are any overhanging trees, and whether there are grasses rooted in the bottom of the pond, with several inches of their growth exposed to the atmosphere. The dew deposited on these would be a large item, and would go to feed the pond. Still, there are undoubtedly some ponds, of large size, with no vegetation appearing above the surface, no drainage except from their own shelving bank, the only visible means of recruiting of which consists of rain and driving mists. Given a period of drought, yet these ponds seem to suffer but little. I am not at all satisfied that straw is really a necessity of the case. I have collected information from several different quarters as to the manner of construction of dew-ponds, but straw is not used in all cases, and when used it is frequently placed above the clay merely to prevent cattle from trampling through the bottom and so allowing the water to escape. If dew-point is reached in the air above a pond, there must be some other factor than the alleged chilling of the clay or the water to bring it about. There is room for more experiment.

E. A. M.

NOTES.

At the last meeting of the Royal Society the following were elected foreign members of the society:—Prof. Santiago Ramón y Cajal, Madrid; Prof. Emile Picard, Paris; Prof. Hugo Kronecker, Berne; and Prof. George E. Hale, Mount Wilson.

Lord and Lady Rayleigh, who have been travelling abroad for several months, have returned to Terling Place, Witham, Essex.

A Central News message from New York states that Prof. F. L. Tufts, professor of physics at Columbia University, was killed on April 15 while testing some electric feed wires.

The annual dinner of the Institution of Mining and Metallurgy will be held at the Hotel Cecil on Friday, April 30. The president, Mr. Edgar Taylor, will preside.

The death is reported, at Louisville, Kentucky, of Dr. Letchworth Smith, at the age of thirty-seven. For several years he had been specially engaged in the study of milk, first at Cornell Medical School and afterwards at the research laboratory of the New York Board of Health. He was the founder of the Babies' Milk Fund Association.

America has lost one of her veteran naturalists by the death of Dr. W. H. Edwards, who was born in 1822, and made a voyage up the Amazon in 1846 to collect objects of natural history. In addition to a volume describing this expedition, he published three series of books on the butterflies of North America. He also contributed to scientific journals a large number of entomological articles.

By the death of Prof. F. E. Hulme, which was announced in the last number of Nature, botany has lost an assiduous votary. Although his professional career lay outside the subject, as he was for many years professor of drawing on the engineering side at King's College, London, he found time to prepare several popular illustrated works on flowers. The best known is "Familiar Wild Flowers," published originally in five series, then extended to eight, and a ninth was revised in proof by the author before his death. "Familiar Garden Flowers," produced in conjunction with Shirley Hibberd, was a contemporaneous publication, and another pleasurable volume, "Familiar Swiss Flowers," appeared last year. The charm of his illustrations lies in the combination of artistic feeling with accuracy of form and colour, while the text discloses an intimate knowledge of plants and flower lore.

A short essay by Mr. Edward Greenly in the Rationalist Press Association Annual suggests that the ancient Greeks, if they were with us to-day, would be much more likely to favour the teaching of natural science than compulsory Greek in schools. Mr. Greenly points out that the geological observations of Pythagoras were as correct, and his conclusions from them as sound, as those of the founders of modern geology. Archimedes, Aristotle, and Eratosthenes of Alexandria also followed the plain and profitable paths which deviated later into the mazes of *a priori* metaphysics, and thus prevented the growth of a scientific Hellenic world. Had the scientific method of inquiry and experiment been pursued, Greek science would have been comparable with that of the nineteenth century, and the whole course of history would have been changed.

Mr. R. Hay Fenton has presented to the Natural History Museum of Aberdeen University his fine collection of British birds' eggs—his labour of love for twenty years. The entire collection consists of about 7000 eggs, and includes good series of all the breeding species. There are some interesting rarities, such as the eggs of Ross's gull, the nesting place of which was discovered by Mr. Buturlin in the delta of the Kolyma River in 1905. There is also a fine series of cuckoo's eggs, about fifty altogether, and the foster-parents' clutches. The last addition to the collection was the egg of the great auk purchased a short time ago in London. In handing over his collection to the University, the generous donor makes the interesting statement that his gift has been largely prompted by his recollection of happy visits which he paid to the museum in his boyhood. The bulk of the collection is now well displayed in carefully protected drawers in the University museum at Marischal College, and may be consulted by all serious students.

In reference to the recently recorded discovery of a skeleton of a mammoth on the beach at Selsey, Sussex (March 25, p. 104), Mr. W. J. Lewis Abbott writes to express the opinion that nearly complete skeletons both of this extinct elephant and of *Elephas antiquus* are commoner in English Pleistocene deposits than is usually supposed. He thinks that the fragmentary nature of many of the specimens recovered is due to unskilled collecting. To the skeletons recorded from Ilford and Ealing, Mr. Abbott adds one from Endsleigh Street, near Euston Station, described by Dr. Henry Hicks in 1892, and one from West Thurrock, Essex, discovered by himself in 1890. Mr. E. Heron-Allen informs us that the whole of the bones recovered at Selsey have been collected by him, and will in due course be deposited in the Natural History Museum, South Kensington. The presence among the remains of the right and left patellæ and a metatarsal bone, all three flawless, will enable experts to judge accurately of the size of the animal when living. Mr. Heron-Allen adds:—"A superficial microscopical examination of the mud in which the skeleton was found has been made by Mr. Clement Reid, F.R.S., and by myself, and proves the deposit to have been fresh-water. The seeds hitherto identified are those of the *Potentilla comarum* (cinquefoil), Myriophyllum (water milfoil), *Eleocharis palustris* (spike rush), *Ranunculus aquatilis* (water crowsfoot), Zannichellia (horned pond weed), Carex (sedge, two species), Potamogeton (pond weed), Stellaria (stitchwort), and *Hippuris vulgaris* (mares' tail)."

In the report for 1908 of the museums and art-galleries under the control of the Corporation of Glasgow, it is mentioned that the total number of visitors to these institutions again touched a million and a quarter, and this without any special new attraction. A number of new specimens have been added to the natural-history collections.

A method of mounting rotifers and protista in Canada balsam is described by the Rev. Eustace Tozer in the Journal of the Royal Microscopical Society (February). Various fixatives, namely, osmic, picric, and glacial acetic acid, absolute alcohol, and formalin, are used, the choice depending on the species to be prepared. An important feature is the performance of the processes of hardening, staining, and dehydrating on a glass slip under a cover-glass, which is kept from crushing the objects by a thread of white cotton placed under one side. The fluids are drawn off by placing blotting-paper outside the cotton thread, the subsequent fluids being applied at the opposite side of the cover. Euglenæ and diatoms are amenable to suitable modifications of the treatment.

In the *Museums Journal* for March Mrs. Roesler (in a paper read at the Ipswich Museums' Conference of 1908) gives an account of the work done, chiefly by herself, in the matter of instruction by American museums. To teachers desirous of giving lectures to their classes on special natural-history subjects, the American Museum of Natural History offers the use of a class-room or lecture-hall, and a lantern with a large stock of slides from which to select. For classes desirous of visiting the exhibition-hall, the museum also provides the gratuitous services of an instructor, who meets the classes by appointment and explains the collections. At the Boston Museum a "docent" performs the same services for classes and visitors for a small fee. The author then proceeds to describe the arrangements for instruction made by herself at the New York Museum. These hung fire for a time, but eventually became much appreciated. Among the arrangements are two courses—in spring and autumn—of informal lectures for children, and the museum also provides several hundred cabinets of natural-history objects for loan to the public schools of New York and its neighbourhood.

Afforestation and timber-tree growing in Great Britain and Ireland forms the subject of a paper read by Dr. J. Nisbet before the Society of Arts, and published in its Journal (March 26). It is mainly a criticism of the report of the Royal Commission issued this year.

An article is contributed by Dr. T. S. Hall to the Melbourne *Argus* (February 20) on the national park which has been formed by the Government of Victoria on Wilson's Promontory, explaining the objects for which the land is being reserved. It is intended to preserve the indigenous plants growing on this area, and introduce such native animals as the grey kangaroo, emu, and lyre-bird. Certain parts of the promontory compare with the famous arboreal and fern scenery around Healesville.

Bulletins on plants poisonous to stock, ramie cultivation, and pure maize seed have been received from the Transvaal Department of Agriculture, and the same topics are discussed by Mr. J. Burtt-Davy in his annual report for 1907–8. Maize cultivation in the colony has received a great impetus owing to the growth of an export trade, and farmers are pressing for a supply of pure seed of good quality. The bulletin points out how good seed may be obtained by selection or by breeding in accordance with Mendelian principles. Three plants are noted as being especially poisonous to stock, *Homeria pallida*, known as yellow tulp, which grows with lucerne, but dies down before the lucerne is ripe, *Chailletia cymosa*, and *Urginea Burkei*.

A new journal, *Mycologia*, edited by Mr. W. A. Murrill, in continuation of the *Journal of Mycology*, was initiated in January. It is announced that each number will contain a coloured plate of fungi in natural colours; the plate in this number illustrates five species of different genera, including *Boletus scaber* and *Hypholoma perplexum*. The editor contributes a first list of American

Boletineæ of North America, and favours the establishment of numerous small genera; besides adopting Tylopilus and Rustkovia of Karsten, he creates four new genera, one of which, Suillellus, is founded on the species *Boletus luridus*. Mr. J. B. Rorer communicates a note on a bacterial disease of the peach which is pretty certainly the same as *Bacterium Pruni*, reported by Dr. E. F. Smith as the cause of leaf spots on plum and peach.

There is considerable opportunity for critical observations regarding the classification of the Polypodiaceæ. In this connection an article by Dr. E. B. Copeland in the botanical series of the *Philippine Journal of Science* (vol. iii., No. 5) respecting the limitation of the genus Athyrium merits special attention. The opinion is advanced that Athyrium, Diplazium, and Anisogonium do not form distinct natural genera, and that certain species of Diplazium show closer affinities with certain species of Athyrium than with other species of Diplazium. Therefore it is recommended to unite the species under the one genus Athyrium, and the author has collated with a key the large number of Philippine species that would come under the genus. In the following number of the journal Dr. Copeland makes a similar suggestion with regard to Cyathea, Alsophila, and Hemitelia, and applies his views in naming a few Philippine species under the generic name of Cyathea.

Prof. Giglioli, of Pisa, has issued as a reprint a paper published in the *Bollettino della Società degli Agricoltori Italiani* in which he discusses some of the newer phases of manurial action. In particular he has collected the results of a number of experiments on the manurial value of manganese dioxide, which has frequently given an increase in crop, although it is not an essential plant food. Indirect manurial actions of this kind are of interest in connection with the idea now being developed in certain quarters that soils contain substances toxic to plants, and a discussion of the phenomena from this point of view is given in the paper.

Bulletin No. 131 of the Purdue University Agricultural Experiment Station contains a report on the working of the recent Feeding-Stuffs Act of Indiana, which, like ours, compels the merchant to guarantee the percentages of oil, protein, and the maximum amount of fibre, and imposes penalties in case the feeding-stuff does not come up to guarantee. There is some difference in detail, and, on the whole, the Indiana Act is more stringent, but it is said to have been entirely effective, and to have improved considerably the standard of goods supplied to the farmer.

The report from the Transvaal Government Laboratories for the year 1907–8 shows a decrease in the total number of samples examined, which, however, is more than accounted for by the falling off in the number of plague specimens. A large number of waters, milks, flours, meals, and other food-stuffs were examined, and attention is directed to the bad state of some of the tinned meats supplied. A number of poison cases were investigated, but it is pointed out that little or no progress can be looked for in dealing with native poisoning cases until a complete examination has been made of the plants indigenous to South Africa and the poisons they contain.

Mr. F. V. Emerson contributes a paper, entitled "A Geographic Interpretation of New York City," to the Bulletin of the American Geographical Society (Nos. 10 and 12, vol. xl.; No. 1, vol. xli.). An elaborate inquiry into the geographical position of New York, and examination of statistics concerning its position in relation to other towns on the Atlantic coast of the United States, leads the author to the conclusions that the commercial growth of New York is due, primarily, to its easy route to the interior, but that there is some evidence that the "momentum" which it has enjoyed from this cause is decreasing. Business men in New York have realised this danger, hence the enlargement of the Erie Canal.

In the March number of the Bulletin of the Imperial Academy of Sciences at St. Petersburg, Prince Galitzin discusses the records of the Calabrian earthquake obtained at Pulkowa. This observatory is specially devoted to a comparative study of the behaviour of various types of instruments, not to that of the movement of the ground; some interesting results seem to have been obtained, among which may be counted the value of electromagnetic damping. This is the only form which gives a constant coefficient of damping for all amplitudes of swing, and its efficiency in eliminating the idiosyncrasies of individual instruments is strikingly exemplified by the reproduction of a double record of two similar Zollner pendula, each recording independently on the same sheet of paper, in which the two curves follow each other with hardly a perceptible divergence in course. It is noticed that all the records indicated an initial movement towards the origin; Prince Galitzin explains this by assuming that the first displacement was outwards, but that the piers, acting as heavy pendula of short period, were tilted backwards by their own inertia, thus producing an apparent inward movement on the instruments which they supported.

In the February number of the *National Geographic Magazine* Captain F. M. Munger, of the U.S. Revenue Cutter Service, gives an account of "the most wonderful island in the world," that near Bogloslof, in the Aleutian Islands, Alaska. In 1886–7 a new island, named "Fire Island," made its appearance. In 1905–6 a new peak rose between this and the adjoining "Castle Rock." Next year a third elevation, called "McCulloch Island," showed itself in the same area. This seems to have exploded in September, 1907, a heavy fall of ashes having covered the entire region for a distance of sixty miles. At the survey in 1907 the formation of the remaining portions of these various volcanic peaks was found to consist of disintegrated rock, basalt, felspar, scoria, tufa, pumice, obsidian, trachyte, and other igneous rocks, with volcanic mud, all more or less discoloured with a deposit of sulphur. The series of excellent photographs obtained by Captain Munger gives an excellent idea of the successive stages of this remarkable exhibition of volcanic energy.

The British School at Rome recently issued an appeal for help towards excavations in the western Mediterranean, accompanied by a report, by Dr. Duncan Mackenzie, on the mysterious Nuraghi of Sardinia and their west-European relations. At Sena he found the so-called "Giant's Tomb," closely connected with the Nuraghe-castle, and remarks:—"On the other hand that the Nuraghe-villagers should turn out to have buried in constructed chamber-tombs that themselves were imitations of the Nuraghe-hut as well as in rock-shelters and rock-cut chamber-tombs would in itself not be a singular phenomenon, but one that has a wide illustration in the Mediterranean Basin and elsewhere in Europe. At the same time an ethnological puzzle of a curious order may well underlie the fact that the people of the Nuraghe-castles should arrogate to themselves for their exclusive use a type of tomb which owes its origin to the primitive dolmen at the same time that they inhabit houses of the same round type as the Nuraghe-huts of the simple villagers." He goes on to illustrate the connection of these remains with the migratory movement through Spain which civilised Europe in the early prehistoric period, France forming the chief highway from north to south. The same tomb-types characteristic of pre-Gallic France recur in the British Islands in the case of New Grange, and the Mediterranean types exhibit special analogies with the horned cairns of Caithness. Excavations in Sardinia and Malta are thus likely to throw much light on the ethnology and prehistoric past of western Europe, and it may be hoped that this appeal will result in liberal aid to a most important investigation, which will continue in the competent hands of Dr. Mackenzie.

THE *U.S. Monthly Weather Review* for November, 1908, contains a suggestion, by Prof. A. G. McAdie, for the reform of meteorological methods, by the gradual adoption of metric and centigrade measures in the records and work of the Weather Bureau. For atmospheric pressure a distinctly new proposition is advanced; the author thinks that if pressure changes were charted in percentages of a standard atmosphere, the result would be more satisfactory to both meteorologists and the public. "Instead of 29·92 inches or 760 mm. we should have the value 1000, meaning thereby the pressure of the atmosphere at sea-level reduced to standard temperature and gravity. Then on any given weather map, in place of 30·3 inches we should have 1012. . . . The great advantage of this is that pressure gradients can be read at a glance, and the average man can readily understand the significance of pressure variation." Prof. McAdie considers this method as much superior to the metric system as that is to the one now in use. The editor of the *Monthly Weather Review* points out that the publication of the paper does not imply the approval of the chief or other officials of the Weather Bureau, but he invites discussion thereon.

THE Weather Bureau of the Philippine Islands has published part i. of its annual report for 1906; this volume occupies 153 quarto pages, and contains the hourly meteorological observations made during the year at the central observatory at Manila. Each of the tables shows also the hourly, daily, and monthly means; the extreme daily values of the various elements, together with the times of their occurrence, are given in a separate table. All the observations are expressed in the metric system, according to the practice adopted at the time of the reorganisation of the Weather Bureau by the United States Government. This detailed publication of observations and means, which began with 1885, is of great value for the purpose of scientific inquiry, and complies with an international understanding that each country should publish such data for one or more of its principal stations. From the general summary we note that the normal annual duration of sunshine (1890–1906) is 2266 hours; rainfall (1865–1906), approximately 76 inches, on 139 days; shade temperature (1880–1906), 80°·4 F. A statement printed in the English edition of the report of the International Meteorological Committee (Paris, 1907) gives the absolute extremes of temperature (1885–1907) as 100° F. and 59° F. The observations at outlying stations of this important organisation form separate parts of the annual report.

DRAWINGS and photographs of a 40-feet gas-driven launch are given in the *Engineer* for April 9. This launch has been built for cruising purposes by Maclaren Bros., of Dumbarton, and is fitted with a 30 horse-power four-cylinder Crossley gas engine and suction gas-producers using anthracite. The gas is cleansed and cooled in a wet scrubber charged with coke; the ascending gas meets a spray of sea-water supplied at the top, and then passes downwards through a dry scrubber also charged with coke. The maximum speed of the engine is about 800 revolutions per minute, and with a compression of 120 lb. per square inch combustion is so complete that there is an entire absence of smoke and smell both in the engine-room and at the funnel. The engine when cold is started on petrol, and runs with this fuel until the producer has settled down to supply the necessary quality of gas. At the trial runs of the launch, under unfavourable weather conditions, a speed of 9 knots was attained, the cost of running being about 2½*d.* per hour.

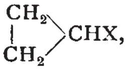
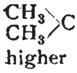
ATTENTION is directed in a leading article in *Engineering* for April 9 to the extent and special character of the plant necessary in warship construction, and to the fact that much of this plant is kept idle during prolonged periods owing to the method of the Admiralty in placing orders. Protective decks, armour, guns, and gun mountings require special plant involving very heavy capital charges without any possibility of return except in naval work. At present, armour for ten or twelve battleships per annum can be produced in this country, but in the past three years armour for eight ships only has been ordered. The time required from casting the ingot until completion of the plate is seventy-seven days, and, of this time, thirty-five days' work may be done before any dimension other than the thickness has been specified. It is therefore urged that armour could be ordered early in the preliminary design of a ship. A 12-inch gun takes ten months to construct, and eighteen months are required for the completion of the latest type of barbette mounting for two 12-inch guns. The *Dreadnought* gun mountings were ordered six months before the ship, and took nine months longer to construct than the ship itself. This plan of ordering gun mountings long before the detailed design of the ship is completed might usefully have been adopted with the ships at present contemplated. Woolwich is not adapted for modern gun mountings, and, in the absence of some guarantee of steady work, it is unreasonable to expect private firms to increase their plant to meet a rush. We have sufficient armour and ordnance plant at present to meet all needs if they are utilised with judgment.

BOTH the *Electrician* and the *Electrical Review* in their issues of April 9 direct attention to two new systems of electric wiring which seem destined to do much in the near future to popularise the electric light amongst those to whom the cost of an installation has hitherto been an obstacle. The new systems are the "Stannos" and the "Kuhlos," and both use a conductor encased in a thin brass or copper tube about a fifth of an inch in diameter. The tube can readily be bent by hand, and is attached to the wall by means of a small clip nailed to the wall and bent over the tube. The cost of wiring is thereby greatly reduced, and the wires are of so small a diameter as to be inconspicuous.

IN the *Physikalische Zeitschrift* for April 1 Dr. O. Krüger describes an addition he has made to the Atwood machine in order to show experimentally that the time of swing of a pendulum depends on the acceleration of its point of support. One of the falling weights of the machine carries the pendulum, and is guided in its fall by two vertical wires, so that the swing of the pendulum will not drag it out of its path. The bob of the pendulum carries a fine brush kept inked by means of a tube in the bob, and this brush writes on a vertical strip of paper during its fall. By regulating the two falling weights the pendulum may be made to ascend or descend with a given acceleration; in the former case the time of swing is decreased, in the latter increased, and the two times are determined from the strip records of the upward and downward motions. In the example given by the author the agreement between the observed and calculated ratio of the times of swing is within one part in one thousand.

The *Journal de Physique* for March contains a description of the apparatus for radio-active measurements by the electroscope method exhibited by Messrs. C. Cheneveau and A. Laborde at a recent meeting of the Société française de Physique. The electroscope is of the type introduced by the late Prof. P. Curie, the leaf of aluminium being supported by a plate rising from the base of the instrument, where it is insulated by passing through a plug of "ambroid." To its lower end a short or a long rod may be attached. Radio-active solids are placed in a shallow cylinder under the electroscope into which a short rod connected with the leaf projects. Gases are tested in a longer cylinder, into which a long rod projects. The aluminium leaf is observed through a microscope with a scale in the eye-piece, one division of which corresponds to 0·4 volt. The normal rate of leak of the instrument is 1 volt in twelve minutes, and the minimum for a measurement 1 volt a minute. The lowest rate of production of radium emanation measurable with the larger cylinder is 0·002 milligram per minute. The authors hope that the simplicity of the apparatus will lead to its extensive use.

Messrs. J. W. Gray and Son, the well-known lightning-conductor experts, of 91 Leadenhall Street, have sent us a pamphlet, from the pen of their senior partner, Mr. Alfred Hands, entitled "Lightning and the Churches." The author estimates that not more than 25 per cent. or 30 per cent. of the ecclesiastical buildings in this country are provided with lightning conductors. Statistics which he has collected show that about twenty-four such buildings are damaged every year by lightning, and that of these about three are fitted with conductors which have failed to afford protection. Failure, he considers, may be due to original faults of construction or arrangement, to decay of important parts, or to alterations made in some of the metallic portions of the building after the conductor had been fixed. It is urged that the system of protection should be designed by an expert to suit each particular case, and should be inspected and tested at least once in every three years. The book contains many interesting photographs illustrating the destructive effects of lightning, and concludes with a list of 244 cathedrals, churches, and chapels which have been damaged by lightning during the last ten years.

The principal features of the *Bulletin de la Classe des Sciences* (1908, No. 12) of the Royal Academy of Belgium are a paper by P. Bruylants on the derivatives of trimethylene and a paper by J. Fraipont on the okapi and its affinities with living and with extinct giraffes. The former paper, extending over eighty-four pages, contains a description of a wide range of compounds containing the group  $\begin{matrix} CH_2 \\ | \\ CH_2 \end{matrix} \!\!> CHX$, the boiling points and densities of which are contrasted with those of the isomeric allyl compounds $CH_2{=}CH.CH_2X$, and of the isopropyl compounds  $\begin{matrix} CH_3 \\ CH_3 \end{matrix} \!\!> CHX$; the trimethylene compounds usually have a higher boiling point and a higher density than the corresponding allyl and propyl compounds. The latter paper is illustrated by an excellent picture in colours of the *Okapia johnstoni*, a map showing its distribution in the Congo basin, and a series of six comparative photographs of the skull of the okapi and related species.

Attention has been directed in these columns to observations by Noyes which indicated that the mobility of the hydrogen ion in hydrochloric and in nitric acids continued to decrease at dilutions considerably greater than those at which other ions exhibit constant mobilities. A recent paper by Chittock in the Proceedings of the Cambridge Philosophical Society records a number of observations in which the same experimental result was obtained, namely, an increase in the migration value of hydrogen in hydrogen chloride from the normal value 0·167 to 0·275 in very dilute solutions. The explanation given is, however, of a much simpler character, the suggestion being made that the decreased mobility of the hydrogen ion is due to its association with traces of ammonia present as impurities in the water, whereby the hydrochloric acid is converted into ammonium chloride. A similar conclusion had already been reached by Whetham and Paine from observations of the conductivity and migration velocities of dilute solutions of sulphuric acid. It should not be difficult, *e.g.* by distilling from phosphoric acid, to prepare water practically free from ammonia and basic impurities, and it would be of interest to know whether such samples of water would give rise to abnormalities similar to those described above.

Messrs. Witherby and Co. have in preparation a work on the "Birds of Kent," by Dr. Norman F. Ticehurst, who has for many years been well known among ornithologists as a close observer of the avifauna of the county. The work will be published by subscription, and only a limited edition will be issued.

A special meeting of the council of the Iron and Steel Institute was held on Tuesday, April 20, under the presidency of Sir Hugh Bell, Bart., to consider the situation created by the resignation of the president-elect, Sir W. Thomas Lewis, Bart. A resolution of regret that Sir W. Thomas Lewis had found himself unavoidably precluded from assuming the office to which he had been elected was passed, and at the unanimous desire of those present Sir Hugh Bell consented to retain the presidency for a further term of twelve months. In that capacity he will, therefore, take the chair at the annual meeting and at the dinner on May 13 and 14 respectively.

OUR ASTRONOMICAL COLUMN.

Halley's Comet.—*Science Progress* for the current quarter (No. 12, April, p. 543) contains an interesting article by Mr. Crommelin, who reviews the past history of Halley's comet and discusses the probable time of the approaching perihelion passage. In the retrospect Mr. Crommelin directs attention to the fact that a fifteen-months' variation of the period caused Halley to hesitate before accepting the conclusions regarding the object's periodicity; it is now known that the planetary perturbations may cause a five-year variation, from seventy-four to seventy-nine years.

The identifications of returns are now carried back so far as 240 b.c., although there is no certain identification of Halley's with any observed comet until 12 b.c.; its appearance at that return is very fully described in the Chinese annals. Mr. Crommelin regards it as certain that the comet will be re-discovered as soon as the region of Orion, where it now is, becomes observable in the autumn of the present year. January or February, 1910, should find it visible in small telescopes, or even to the naked eye.